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THE PROBLEMS AND POSSIBILITIES OF TANK TRANSPORTATION  
OF MILK FROM THE FARM TO THE MILK PLANT.

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In dealing with this subject it will be necessary to take a broad view of the dairy industry.

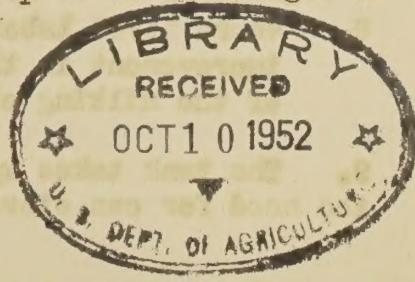
First, let us consider the importance of milk as a food. It has been said that the most important thing in life is food, and that the most important of all foods is milk.

Second, from the nutritional viewpoint, no other food supplies the balanced nutrition at so low a cost. By way of example, recently in one of the government bulletins it was stated that the retail price of a pound of pure protein in the form of meat was about \$5.60 per pound; in the form of fresh milk at 20¢ per quart, \$2.60 per pound; in the form of dried, non-fat milk solids, \$1.19 per pound.

Third, consider the increase in population. Births at the rate of 6,000 every 24 hours, together with the increased longevity, means an ever upward curve in population. As against this, for the last three years the supply of milk remained static except that last year it dropped off about 1%. We have, accordingly, a population curve going up, a milk production curve going down. Unless milk production is increased the per capita supply will continue to be smaller and may lead in time to a deficient diet.

Those of us in the industry realize that the cost of producing milk -- feed, labor, and investment in equipment, has increased sharply. This is true, also, of the cost of transportation from the farm to the plant, receiving and processing in the plant, and distribution from the plant to the ultimate consumer. We also realize that the public is demanding increasingly higher standards of quality.

It is interesting, as well as important, therefore, that we give our attention to a new development in producing, transporting and handling, that not only reduces the labor and transportation cost but also provides vastly improved quality. This new development referred to as "bulk handling," together with loose housing of cattle, modern milking parlors, and tank pick-up, has eliminated much of the hard labor for the producer and has made the production of milk on the farm much more attractive than the old methods. As a result, in our milk shed we are interesting farmers in the production of milk who formerly majored in the production of other farm commodities, such as beef, pork, and grain. We firmly believe that many of the producers of tomorrow will be found among farmers who at present are not milking cows. We will refer to the specific advantages of the new method to the producer a little later.



Let us consider the problems of today's milk plant with its ever increasing costs. In addition to the cost of milk, there is the increased cost of labor, packaging, supplies, maintenance, depreciation, delivering, and selling, with the ever growing investment in buildings and equipment. A great deal has been done and a great deal remains to be done in streamlining the processing procedures, improving the efficiency, and lowering the costs, consequently cutting down some of the "bites" out of the price the consumer pays for every 100 lbs. of milk. The "bulk handling" system will help to some extent by eventually eliminating the receiving room and its attendant costs. These have been estimated to be from 15¢ to 25¢ per 100 lbs.

Advantages to the Producer:

This system of milk handling obviously offers many advantages to the producer, hauler, and processor. The chief advantages to the producer are the following:

1. The elimination of the hard labor necessary when handling milk in cans.
2. It takes less time for the milking chore. Time is saved in the preparation of cans, strainers, and other equipment as well as the time necessary to check the filling of the milk can so that it does not run over.
3. Dairymen always lose a certain amount of their milk when it is handled in milk cans. This can loss is inevitable and the amount of loss varies, depending on the method of dumping the milk at the dairy and also the season of the year and the fat test of the milk. Besides the actual volume loss there is also the increased fat loss with the can system. The drippings collected from can washers at dairies will test on an average of from 6% to 7% fat. Therefore, these stickage losses show up both as a difference in weight and a lowering of the fat test as shown by records from the farm.
4. Thorough mixing of the milk in the farm tank assures a uniform fat sample. Present sampling from the weigh scale in the dairy is not always accurate.
5. With the sampling being done at the dairy farm, it is possible for the producer to keep a duplicate fat sample and have this checked tested to compare with his test from the dairy.
6. Producers like the fact that they sell their milk in their own dairy house. From the readings on a calibrated measuring stick, they know the exact amount of milk which they are sending to the dairy. They are able to check this reading with the hauler if they so desire.
7. Bulk tank users report substantial savings in electric power costs for the milk cooling job. Reports of \$1.50 to \$6.24 per month have been made. This varies with the size of the dairy farm.
8. Where hired labor is used for the milking operation, owners report improvement in the attitude of these workers. The overall simplification of the milking chore is liked very much by the average dairy laborer.
9. The tank takes up much less room in the dairy house as well as eliminating the need for can storage space. It is, therefore, possible to increase

production with the present milk house or, when building a new dairy house, it is possible to make a substantial savings in the construction cost of the new dairy house.

10. Producers everywhere report improvement in milk quality. Milk is cooled to 38° soon after milking. Bacteria just do not have an opportunity to grow. The average dairy with proper attention to milking utensils should be able to produce milk with counts consistently under 10,000. Many are producing milk under 5,000.
11. In a number of instances it has been possible to reduce the milk hauling rate. This, of course, depends upon local conditions. Deductions of from 4 cents to 15 cents per cwt. have been reported. In some cases where it was going to be necessary to increase hauling rates, the introduction of the bulk system made this unnecessary.
12. Milk can replacement is eliminated.
13. Some dairies have installed premium quality standards. With the bulk system it is easier to meet these lower bacteria requirements and thus qualify for these premiums. Bacteria samples are taken at the farm from the tank under most ideal conditions for the producer.
14. Accidental spillage of milk due to can runover or accidental upset when removing from the can cooler or loading into the truck or even at the dairy is eliminated.
15. A frequent criticism of can coolers by fieldmen is stagnant water as well as improper water levels. This problem is eliminated with the bulk system.
16. At certain seasons of the year, it is not uncommon to find milk in partially filled cans churned when it arrives at the dairy. This, of course, affects the butterfat tests. This is not a problem with the bulk system.
17. In the northern part of the country, it is common to receive milk on some days that is frozen to a considerable extent. The bulk system eliminates the possibility of wasted products and time due to frozen milk.

Advantages to the Hauler:

1. The milk hauling job is much easier. It is possible to use men of slight physical build as well as older men on this job.
2. A tank truck operating job is much more desirable as it is a much cleaner job.
3. It is possible to haul bigger pay loads and, in some cases, make two or three loads per day with the bulk system.
4. Where two men are used for can pickup, it is possible to save labor with the bulk system.
5. Where the every other day pickup system is used, it is possible to cover a greater area with one tank truck.

6. A stainless steel tank truck has a much longer life expectancy than the average can truck body.

Advantages to the Dairy Plant:

1. They receive better quality milk.
2. The milk arrives at the plant at approximately 40° F. which is colder than can milk. Therefore, it is possible to make a savings in raw milk cooling costs.
3. Receiving of milk in tank truck eliminates much of the labor in the receiving room which includes sampling, dumping, and cleaning. Can washing costs are also eliminated.
4. Where it is possible to receive all milk in bulk, it is possible to eliminate all receiving room equipment with a saving in space and investment in the necessary receiving equipment.
5. Receiving of milk in bulk simplifies inter-plant transfer of milk where this is necessary.
6. Where it is possible to pick milk up every other day, it is possible for the dairy to shut down operations completely and thus affect substantial savings in operating costs.
7. Sewage disposal is becoming an increasing problem with many dairies. The can washer is the chief offender and the elimination of this source of sewage is possible with the bulk system.
8. Installation of the farm tank removes the receiving room to the dairy farm. The resultant closer contact between the producer and the processor is advantageous to both parties.

Problems or Disadvantages:

1. In some cases it may require some additional investment on the part of the producer, depending upon what kind of set up he has at present. It can be safely said, however, that in the absence of stanchion barns and milk houses with the can cooling equipment, that a farmer could get into milk production, using loose housing with pole barns, a milking parlor, and bulk cooling for considerably less investment than he could if he were to build new stanchion barns, milk houses and provide cans and can coolers.
2. Road conditions— it is possible that in some areas there might be difficulty in getting a tank truck of the usual size in and out of the farms. However, our own experience indicates that we will have no problems on that score. We are operating a 2,000 gallon tank, mounted on a dual drive rear axle chassis and went through spring "break up" with no problems. Our hauler is satisfied that he can deal with more mud and snow with the tank truck than he can with the conventional can pickup truck.

3. Road embargos-- at our milking shed we have had no problems with the State and County authorities in putting a vehicle of this size and weight over the roads. It is an item, however, that should be carefully checked.
4. Gathering Two Grades of Milk -- if a milk plant is going to pick up both Grade A and ungraded milk on the same trip, he should provide separate compartments. This does complicate the system somewhat. We have had no problem on that score since everything we buy is U. S. Public Health Grade A.

Conclusions:

In conclusion, we are satisfied that "bulk handling" and transportation provides much lower costs, lightens the labor, and provides, if desirable, a wider scope of operation. In eliminating the milk can and the always questionable can washer, we have improved the quality immeasurably. In our own operation we have, from the beginning, gathered our milk on an every-other-day basis. This is particularly important in the Midwest where we have smaller milk producing units. We have experienced no difficulty in bacteria counts, flavor and quality and this method has the approval of the authorities under which we operate. It can readily be seen that considerable savings accrue when the milk from a 5-can producer can be picked up every-other-day rather than daily. We have also observed that once the producer removes the limitations of stanchions, that he invariably expands his herd, milks more cows, and produces more milk.

We have one producer whose daughter of high school age milks 30 cows morning and night. We have another whose 11-year-old son does the milking. The wife of one of our prominent producers is giving up her poultry raising project and spending that time milking more cows; her reasons being, milking with the new system is much easier work.

It has been a real pleasure to be with you and if any of you care to make personal observations of bulk handling in our milk shed, we shall be delighted to have you at any time. We are sure that you will find a group of satisfied producers.

